A Population Survey of the Bonnet Monkey (*Macaca radiata* Geoffroy) in Bangalore, South India

BY

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(With a map)

This paper presents data on the population of Bonnet Monkeys (*Macaca radiata* Geoffroy) in different parts of Bangalore city. In all, 20 sectors or postal zones were surveyed from August 1964 to January 1965. The zones other than those enumerated in the table at page 253 were entirely devoid of monkey population. There is no other species of monkey in Bangalore, with one exception in the Cubbon Park troop which has accepted a Rhesus female, probably an escape from captivity.

The objectives of the population survey were to gather data on the abundance and the distribution of bonnet monkeys, and on group-size and composition, to ascertain the ecological factors responsible for the distribution and troop size, and to study food and habitat preferences.

Description of the Area

The city of Bangalore (the capital of Mysore State in south India) lies between 12°55′ and 13°03′N. and 77°32′ and 77°44′E. and has an area of nine square miles. The elevation of the highest Bangalore table-land is approximately 3000 ft. above sea-level.

The dry crops are ragi (*Eleusine corocana*), cow gram (*Dolichos lablab*), jola (*Sorghum vulgare*), horse gram (*Dolichos biflorus*), etc., and a variety of other items of less intensive cultivation. A noteworthy feature is the occurrence of flowers throughout the year owing to the salubrious climate.

The climate of Bangalore is dry in January, February, March, and December, with little or no rain, i.e. 0·1 to 0·5 mm. In June and

8

November there is slight rain, in May, July, August, and October moderate rain, about 125 mm. The highest rainfall recorded is in the month of September going up to 170 mm.   –

The average mean temperature and diurnal range at Bangalore are in January 74 and 16, May 80 and 22, July 74 and 16, November 71 and 17 Fahrenheit. (Imperial Gazetteer of India, Mysore and Coorg; 1927).

The minimum temperature as recorded in the months of November, December and January is approximately 13°C. to 15°C., and occasionally goes down to 10°C. The temperature is highest in March, April and May i.e. 30° to 34°C. During the rest of the period the average temperature is 24°C. The population of Bangalore is about fourteen lakhs.

METHODS

Bangalore with its availability of water, food, and shelter was convenient for survey of the monkey population of an urban area. The roadside shopkeepers on many occasions could give us information regarding the presence of monkeys in their vicinity, as their exposed wares attract the animals.

The search of temple localities gave most fruitful results, in some areas more than one troop being encountered. Duplication of counting was avoided by identifying individual troop members. Some members of each troop were discriminated by such characteristics as brow wounds, scars, freckles, tears in the ears, and so on. After sometime, we could easily distinguish individual monkeys by their facial characteristics.

For group composition all members of a troop, males and females, were classified according to age groups into adults (above 5 years), juveniles (1-3 years), and infants (below 1 year).

RESULTS

In the five months, during which the population was surveyed, a total of 14 troops was seen in different localities (Table and Map). In the Table the different localities are grouped in ecological sectors.

NATURE OF HABITAT AND FOOD

Garden Sector

Lal Bagh, the State botanical and horticultural garden, is a very old garden and one of the best of its kind in the East. It has various types of economic plants, fruits, arboretum, herbs, and a variety of flora under cultivation, such as palms, conifers, giant bamboos, orchids, and an

assemblage of other plants including coffee, mulberry, baniah cotton, American upland cotton, medicinal plants like cinchona, chalmogra,

TABLE

GROUP SIZE AND COMPOSITION OF TROOPS

Locality	Sl. No. of Troops	Adult ♂	Adult ♀	Juveniles	Infants	Total
Garden Sector :						
(Total Population 65).						
Lal Bagh (Tank)	1	3	11	5	3	22
Lal Bagh (Gate)	2	3	6	5	6	20
Cubbon Park	3	4	5	7	7	23
Temple Sector :						
(Total Population 84).						
Malleswaram	4	2	5	5	2	14
Gandhi Bazar	5	8	7	5	7	27
Nagartharpet	6	20	12	4	7	43
Market Sector :						
(Total Population 110)						
Yeshwanthapur	7	3	7	6	1	17
Ulsoor	8	5	6	5	4	20
Subedar Chatram Rd.	9	7	12	5	4	28
Tharangpet	10	10	16	3	2	31
Chamarajpet	11	5	5	4	..	14
Extension Sector :						
(Total Population 37)						
Mekhri Circle	12	5	4	1	1	11
Wilson Garden	13	3	4	1	2	10
Fraser Town	14	6	7	1	2	16
Total	14	84	107	57	48	296

digitalis, aromatic plants like, pachouli, citronella, linaloe, and a variety of fruit-bearing plants. Cubbon Park also has many plants of botanical interest. The sector also includes boulevards and green lawns.

The monkeys feed on practically all the plants, especially bamboo-shoots, mango leaves, and flowers, mulberry, *Ficus*, grass blades, discarded oats, grasshoppers, flies, and even the pupae found on the under-surface of leaves.

Temple Sector

The habitat around the temples is not as rich in vegetation as the garden sector, but there is plenty of food and protection as temple

environs are in the nature of a sanctuary. All temples have at least a few large trees that offer shelter. The food consists chiefly of left-overs of the offerings made by visitors in the form of rice, bananas, coconuts, and so on. Sometimes visitors feed them with buns, bread, and other edibles.

Market Sector

This habitat is heavily congested and devoid of vegetation ; instead, it has tall buildings, and all types of shops, hawkers, and pavement vendors. The food is mainly discarded fruits, vegetables, rice, and at times the monkeys do not hesitate to pilfer food from a passer-by, either stealthily or aggressively, the latter especially from women and children.

Extension Sector

The habitat consists of spaced shops and houses, with a few big trees that offer shelter. For food the monkeys chiefly depend upon left-overs, scraps found in garbage heaps, and leaves.
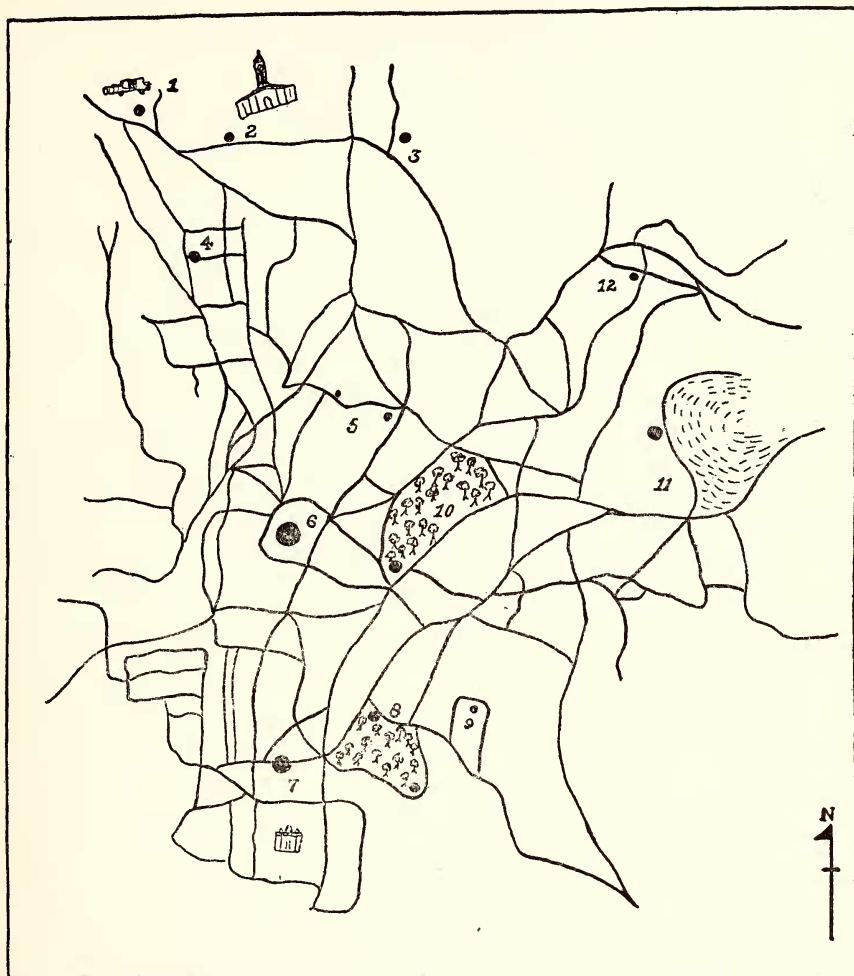
Conclusions

On a comparative assessment the average troop size of the garden sector is 21·6, the temple sector 28, the market sector 22, and the extension sector 12·3.

The market sector harbours more troops than other sectors, probably due to the habitat advantages and easy availability of food and shelter. Here even roof tops of tall buildings become sleeping quarters of the animals during night. The temple sector has the next largest concentration, probably due to the availability of food and shelter. Next comes the garden sector, where the monkeys have shelter and a variety of food, but are exposed to a certain amount of harassment. The extension zone, because of the scarcity of food and shelter, has the least number of monkeys.

The Bonnet population in Bangalore is not as dense as the Rhesus population seen in the villages of north India and does not have their relative troop size (Southwick, Beg, & Siddiqi 1961). Though, some of the troops may have as many as 47 to 50 members, the average troop size remains small (21·14).

The sex ratio in troops 3, 5, 8, 11, 12, 13 and 14 was approximately 1 : 1 in troops, 1, 2, 4, 7, 9 and 10, the number of females was more than that of males, and in troop 6 the number of males was more than the females. It seems that the differences in the sex ratio is related to the sex ratio of the new born. No exclusively male group has been seen, in contrast to that of langur (Phyllis Jay 1961), and no solitary monkey was seen either.

Map of Bangalore showing the location of the different troops.   (Dots)

1. Yeshwanthapur.	2. Indian Institute of Science.	3. Mekhri Circle.
4. Malleshwaram.	5. Gandhi Nagar.	6. Tharagpet.
7. Gandhi Bazar.	8. Lal Bagh.	9. Wilson Garden.
10. Cubbon Park.	11. Ulsoor.	12. Fraser Town.